Poster code:

B2

In situ recovery of biobutanol produced from simultaneous saccharification and fermentation using gas stripping technique

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Abstract. The butanol produced during ABE fermentation is one of the major drawbacks that causes toxic to the microbe thus lowering the butanol titer. Applying integrated recovery system will enhance the butanol recovery and minimize the effect of butanol onto microbe. In-situ recovery by using gas stripping technique of acetone-butanol-ethanol (ABE) has been widely reported as high ABE recovery. However, the study of gas stripping on simultaneous saccharification and fermentation of oil palm empty fruit bunch (OPEFB) is limited. Thus, this study was carried out in order to improve butanol recovery using gas stripping techniques from simultaneous saccharification and fermentation (SSF) as compared to the SSF without integrated system. In addition, SSF with yeast extract delayed was also conducted that had improved by 42% of butanol production as compared to normal batch fermentation. Furthermore, applying in-situ recovery had reduced the butanol toxicity and increased butanol production by 20%. This strategy had improved SSF system in overall.

Keywords: In situ recovery, gas stripping, butanol, simultaneous saccharification and fermentation.